

December 2007 Damaging Wind Storm and Flooding in Northwest Oregon and Southwest Washington

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A strong Pacific storm system moved across northwest Oregon and southwest Washington, December 1-4, 2007, giving the area a one-two punch of hurricane force winds with treacherous sea conditions, accompanied by heavy rain and flooding. The prolonged duration of damaging winds, along with intense, heavy rain that produced areas of major flooding was extraordinary.

The unusually strong Pacific storm resulted from a pair of low pressure systems and attendant frontal systems that were fueled by tropical moisture, bringing a one-two punch to northwest Oregon and southwest Washington, Saturday December 1 through Tuesday, December 4. The storm was unusual in terms of the prolonged duration of strong, damaging winds and the heavy rain and snow it produced. The weather system initially moved into an existing cold air mass which produced snow in the Coast Range, Cascades and Columbia Gorge. Snow reports ranged from 2 to 6 inches in the Coast Range and Columbia Gorge and 15 to 18 inches in the Cascades during the December 1-2 time frame. The snow storm was followed by a severe, damaging wind event that produced hurricane force winds beginning early Sunday morning, December 2 and continued through December 3, with nearly 36 hours of damaging, high winds. Sustained winds of 70 to 80 mph with gusts of 102 to 129 mph were reported in several coastal communities from Lincoln City on the central Oregon Coast to the Long Beach peninsula in southwest Washington. Refer to Table 1 for a list of wind speeds. The high winds downed or snapped thousands of trees along the coast and coast range, causing significant property damage, widespread power and communication outages for several days. All east-west highways leading from the Willamette Valley to the coast were closed due to fallen trees and flooding.

Offshore data buoys also reported wave heights of 44 to 48 feet during the peak of the storm. The treacherous ocean conditions prompted closure of the Columbia River Bar and all ocean cargo vessels going into the ports along the Columbia River from Sunday, December 2 through early Wednesday, December 5.

As the strong, deep low pressure system that produced the damaging winds moved into British Columbia, the associated system with tropical moisture laden air surged inland and produced very heavy rainfall over northwest Oregon and western Washington. The axis of heaviest rainfall stretched in a southwest to northeast line from Tillamook and Columbia Counties in northwest Oregon to the Chehalis river basin in Lewis County, Washington. Over fourteen inches of rain fell at Lees Camp, OR, 12.5 inches in the Willapa Hills in southwest Washington, and 11 inches of rain fell in Vernonia, OR in the north Oregon Coast Range during a 60 hour period from December 1-3. Refer to Table 2 for a list of rainfall totals for this storm.

The National Weather Service in Portland, OR issued outlooks, watches and warnings well in advance of the high winds, treacherous sea conditions and flooding. An outlook for strong, damaging winds was issued on Wednesday, November 28, followed by a high wind watch on Friday, November 30. A hurricane force wind warning was issued for the coastal waters on Saturday afternoon, December 1. High wind warnings were also issued for the inland Coastal area and Coast Range on Saturday afternoon, December 1. A Flood Potential Outlook for rivers in northwest Oregon and southwest Washington was issued on Saturday morning, December 1, followed by a Flood Watch for the same area on Sunday morning, December 2. Flood warnings were issued for 19 river forecast points in northwest Oregon and southwest Washington, beginning the evening of Sunday, December 3. Seventeen of the nineteen flood warnings reached or exceeded flood stage. Five rivers in northwest Oregon and southwest Washington reach major flood category. Refer to Table 3 for a listing of flood crests.